Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] A method for the manufacture of sub-wavelength structures on a substrate, the method comprising the steps of:
providing a deformable photoresist on the substrate;
forming a hydrophilic stamp made of a material having a higher refractive index than the photoresist, said stamp carrying wave guiding structures;
imprinting said wave guiding structures into the deformable photoresist by bringing said stamp and the substrate in close contact;
coupling light into the wave guiding structures, thereby creating evanescent waves to expose the photoresist; and
developing the photoresisist.

[c2] A method according to claim 1, wherein the photoresist is a positive photoresist.

[c3] A method according to claim 1, wherein the photoresist is a negative photoresist.

[c4] A method according to claim 1, wherein said wave guiding structures are formed by a mask production method.

[c5] A method according to claim 1, wherein said wave guiding structures are formed by a replica method from a precursor.

[c6] A method according to claim 1, wherein said material comprises poly-(dimethyl)siloxane.

[c7] A method according to claim 1, wherein said coupling is performed using a grating structure.

[c8] A method according to claim 1, wherein said coupling is performed using a prism structure.

[c9] A method according to claim 1, wherein said coupling is performed via optical fiber connectors.

[c10] A method according to claim 1, further comprising covering said stamp with a metal layer.

[c11] A method according to claim 10, wherein said metal layer comprises chromium.

[c12] A method according to claim 1, wherein said sub-wavelength structures have a size which is variable in accordance with the material of said stamp.

[c13] A method according to claim 1, wherein said sub-wavelength structures have a size which is variable in accordance with the material of the photoresist.

[c14] A method according to claim 1, wherein said sub-wavelength structures have a size which is variable in accordance with a wavelength of light used to expose the photoresist.

[c15] A method according to claim 1, wherein critical dimensions of said sub-wavelength structures depend on an entrance depth of said evanescent waves.